

Four new records of *Bulbophyllum* (Orchidaceae) for Manipur, India^a

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Abstract

Four species of the genus *Bulbophyllum* Thouars (Orchidaceae) are reported for the first time from Manipur. A brief description, as well as information about phenology and distribution, and illustration, is presented to make identification easy.

Résumé

Quatre nouveaux enregistrements de *Bulbophyllum* (Orchidaceae) de Manipur (Inde) – Quatre espèces du genre *Bulbophyllum* Thouars (Orchidaceae) sont enregistrées pour la première fois dans l'état de Manipur. Afin d'en faciliter l'identification sur le terrain, une brève description en est donnée, accompagnée d'illustrations ainsi que de diverses informations sur la phénologie et la distribution géographique.

Introduction

Bulbophyllum Thouars is one of the largest genera of Orchidaceae with about 3048 species (Govaerts *et al.*, 2014) distributed mainly throughout the tropical regions of both the old and new worlds. A review of the literature reveals that the genus is represented by c. 100 species in India (J.D.Hooker, 1890; Mukerjee, 1953; Pradhan, 1979; Shukla & Baishya, 1979; Ghatak & Devi, 1986; Katak, 1986; Deb, 1996; Hyniewata *et al.*, 2000; Chauhan, 2001;

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Pearce & Cribb, 2002; Rao, 2007; Lucksom, 2007; Misra, 2007), of which c. 75 species and 3 varieties are distributed in NE India and about 25 species and 1 variety are found in Manipur (Kumar & Kumar, 2005; Chowlu *et al.*, 2013; Chowlu *et al.*, 2014). Explorations in various districts of the state of Manipur by a team of Scientists from the Orchid Research & Development Centre of Hengbung yielded many interesting orchid species which have hitherto not been reported for the state. These include 4 species of *Bulbophyllum* viz *B. cylindraceum* N.Wallich ex Lindley, *B. forrestii* Seidenfaden, *B. helenae* (Kuntze) J.J.Smith and *B. penicillium* S.Parish & Reichenbach f., which are discussed below in alphabetical order with a brief description, phenological and distribution details. For each of the four taxa, colour illustrations are provided for easy identification.

Taxonomic descriptions

Bulbophyllum cylindraceum N.Wallich ex Lindley

in *The Genera and Species of Orchidaceous Plants*: 53 (1830); Pearce & Cribb in *Orchids of Bhutan*: 458 (2002); Lucksom in *Orchids of Sikkim & Northeast Himalaya*: 712, fig. 452, Pl. 32 (2007).

Phyllorchis cylindraceum (N.Wallich ex Lindley) Kuntze, *Revisio Generum Plantarum* 2: 677 (1891).

Bulbophyllum imbricatum Griffith, *Notulae ad Plantas Asiaticas* 3: 289 (1851).

Pseudobulbs 4-6 cm long, sheathed; sheaths 2-3 cm long, lanceolate, acute, brown; leaf solitary, 10-14 × 1.8-2.5 cm, oblong-lanceolate, acute, thick, petiole 1-1.5 cm long, folded; inflorescence 13-16 cm long, erect, densely many flowered, cylindric, racemose; flowers 4-5 mm across, maroon; sepals unequal, dorsal sepal 5-5.5 × 3 mm, ovate-triangular, acuminate, 3 veined, apex recurved, lateral sepals 4.8 × 3 mm, ovate-oblong, obtuse, 3 veined, glandular-pubescent; petals 2-2.5 × 1 mm, ovate, acute, 1 veined, creamy, apex dark maroon; lip 4-4.5 × 2.5 mm, simple, fleshy, ovate-oblong, obtuse, deflexed, papillose, maroon-yellow; column 0.5-0.7 mm long, erect, apex 3 lobed, toothed, foot c. 1.5 mm long, curved. (Plate 1)

Flowering: October-November.

Specimen examined: India, Manipur, District Senapati, Willong, Chowlu 00411 (COGCEHR herbarium, Hengbung).

Distribution: India (Arunachal Pradesh, Manipur), Nepal.

Notes: this species is closely allied to *B. khasyanum* but can be distinguished by its inflorescence being subtended by a distinct large bract.

Bulbophyllum forrestii Seidenfaden

in *Dansk Botanic Arkiv* 29(1): 120 (1973); Seidenfaden in *Orchid Genera in Thailand* VIII 165 (1979); I.C.Barua in *Flora of Kamrup District Assam*: 142, t. 45 (2001); J. Augustine *et al.* in *Orchids of India. II: Biodiversity and status of Bulbophyllum* Thouars: 45 (2001); X.Q.Chen & J.J.Vermeulen in Z.Y.Wu *et al.*, *Flora of China* 25: 428 (2009).

Cirrhopetalum aemulum W.W.Smith in *Notes from the Royal Botanic Garden Edinburgh* 13: 195 (1921). *Rhitionanthos aemulum* (W.W.Smith) Garay, Hamer & Siegerist in *Nordic Journal of Botany* 14: 637 (1994).

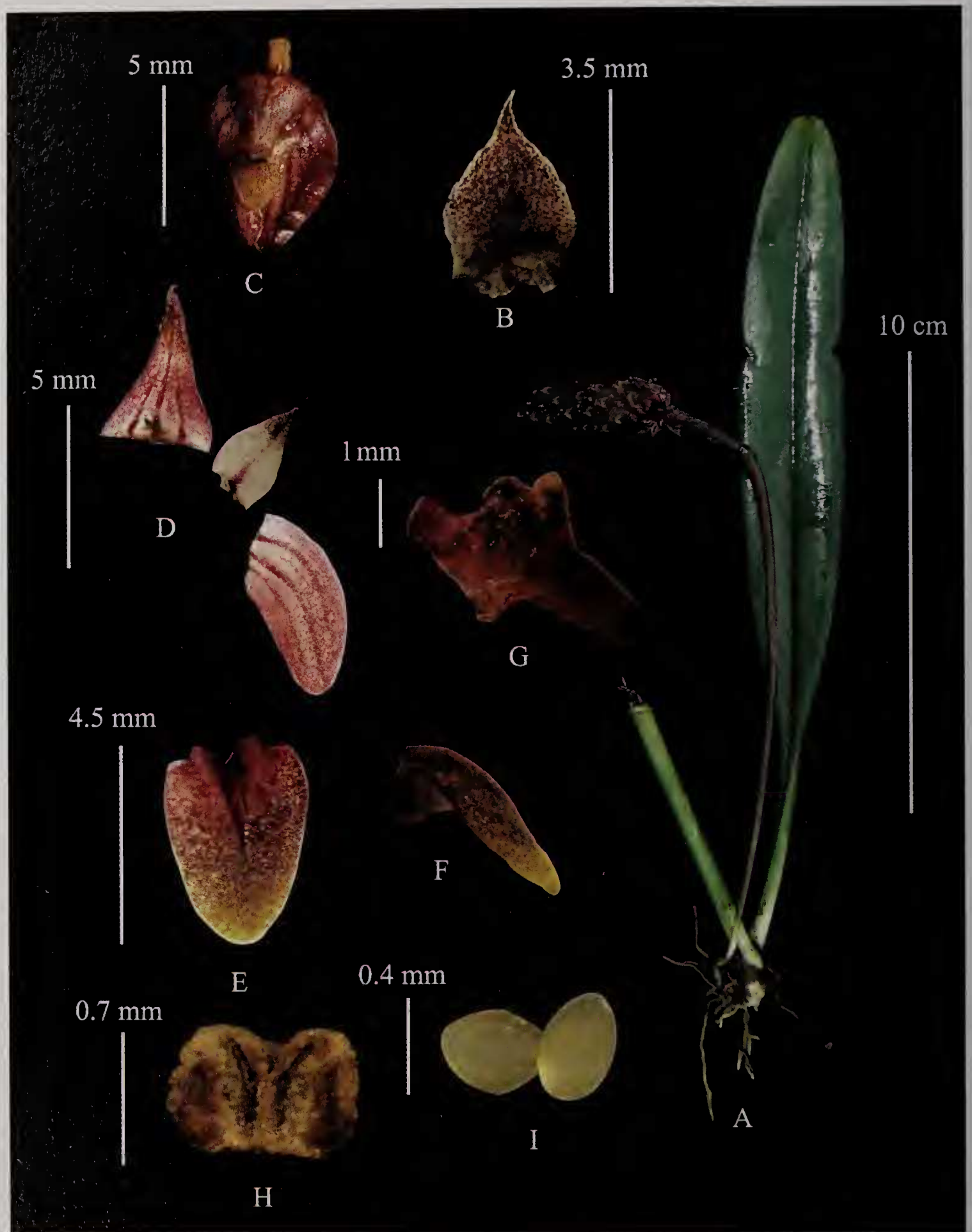
Pseudobulbs 2.5-3.5 × 1.5-2 cm, ovoid-oblong, ribbed, separated by 1-2 cm rhizome, base covered with sheathing bracts; leaf solitary, 16-19 × 2-2.5 cm, oblong, obtuse, thickly coriaceous, petiole 1-2 cm long; inflorescence 10-14 cm long, 6 flowers, capitate, erect or drooping, peduncle with 2-3 sterile bracts, terete, green with black spots, rachis c. 0.5 cm long; flowers 3.5-4.0 mm across, orange yellow tinged with maroon; sepals unequal, dorsal sepal 5-6 × 3-3.5 mm, ovate-oblong, obtuse, orange yellow with maroon lines, lateral sepals 17-20 × 2-3 mm, narrowly oblong, acuminate, orange-yellow with maroon papillate, falcate, both the sepals forming a conical tube except at tip and base; petals 3-3.5 × 1.5-2 mm, triangular, acute, orange-yellow with maroon at tip and sides, margins dentate, papillate; lip 2.5-3 × 1-1.5 mm, simple, oblong, obtuse, orange-yellow with maroon papillae, 3 ridges; column 1.5-2.5 mm long, stout, orange-yellow, stelids caudate-acuminate, foot c. 3 mm long, curved. (Plate 2)

Flowering: July-August.

Specimen examined: India, Manipur, District Senapati, Oklong, Chowlu 00478 (COGCEHR herbarium, Hengbung).

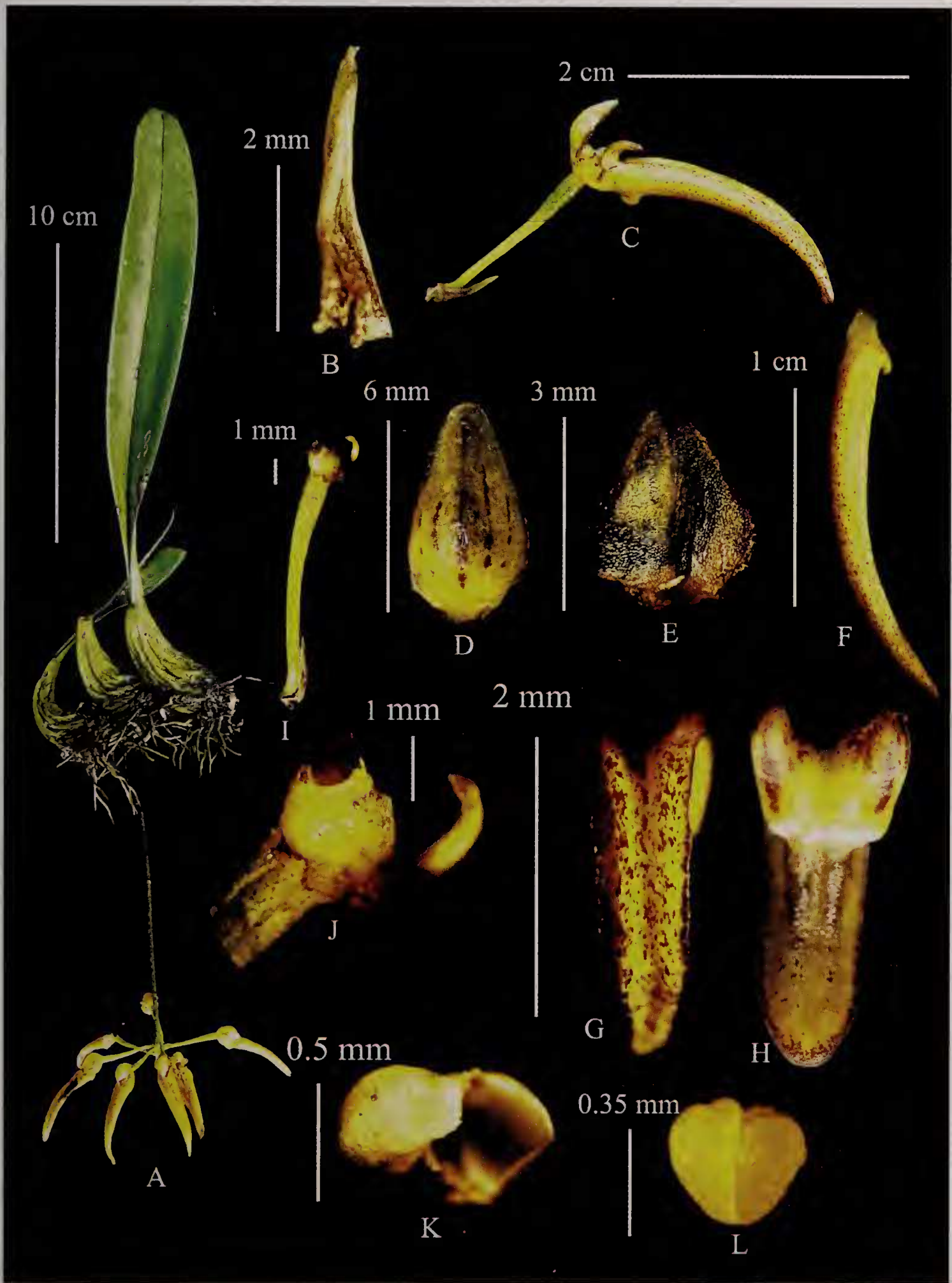
Distribution: India (Assam), China, Myanmar, Thailand.

Notes: the maroon dots on lip and the umbel inflorescence are the important salient features which differentiate this species from *B. helenae*. Further, it may be noted that the plants collected from Manipur exhibit both erect and drooping inflorescences. The protologue, however, mentions only erect inflorescence (Seidenfaden, 1973).



Pl. 1: *Bulbophyllum cylindraceum*

A. Habit; B. Bract; C. Flower; D. Floral parts; E. Lip; F. Lip (side view); G. Column; H. Anther cap; I. Pollinia.



Pl. 2: *Bulbophyllum forrestii*

A. Habit; B. Bract; C. Flower; D. Dorsal sepal; E. Petal; F. Lateral sepal; G. Lip (Front view); H. Lip (Back view); I. Column with pedicel ovary; J. Column; K. Anther cap; L. Pollinia.

Bulbophyllum helenae (Kuntze) J.J.Smith

in *Bulletin du Jardin Botanique de Buitenzorg* 2(8): 24 (1912); Pearce & Cribb in *Orchids of Bhutan*: 469 (2002). *Phyllorchis helenae* Kuntze in *Revisio Generum Plantarum* 2: 676 (1891).

Cirrhopetalum cornutum Lindley in *Botanical Register* 24(misc.): 75, n° 138 (1838). *Bulbophyllum cornutum* sensu (Lindley) Reichenbach f. in Walpers, *Annales Botanices Systematicae* 6: 261 (1861). *Rhytionanthos cornutum* (Lindley) Garay, Hamer & Siegerist in *Nordic Journal of Botany* 14(6): 637 (1994).

Pseudobulbs 2.5-3.5 × 0.5-1 cm, ovoid-oblong, compressed, clustered, separated by a distance of about 0.5-1.5 cm on rhizome; leaf solitary, oblong-elliptic, 9-12 × 1.2-1.6 cm, sub-acute, obliquely retuse, thick, petiole 1-2 cm long, channeled; inflorescence 10-12 cm long, sub-erect, umbellate, laxly few flowered; flowers 3-4 mm across, orange-yellow, pungent smell; sepals unequal, dorsal sepal 5-7 × 2.5-3.5 mm, ovate, acute, 5 veined, orange-yellow, margins minutely serrate, concave, hooded over the column, lateral sepals 15-17 × 2-3 mm, narrowly lanceolate, acuminate, falcate, jointed, free at base; petals 2.4-3.0 × 2 mm, ovate, acute, yellow apex with reddish maroon, 3 veined, margins dentate; lip 2.5-3.5 × 1-1.3 mm, oblong, sub acute, yellow, deflexed from base, apex curved; column 1-1.5 mm long, erect, wings minute, foot 1.5-2 mm long, curved, yellow. (Plate 3)

Flowering: July-August.

Specimen examined: India, Manipur, District Senapati, Sadim, Nanda 00386, 00387 (COGCEHR herbarium, Hengbung).

Distribution: India (Manipur, Utrakhand), Nepal, Myanmar and Thailand.

Bulbophyllum penicillium S.Parish & Reichenbach f.

in *Transactions of the Linnean Society of London* 30: 151 (1874); Pearce & Cribb in *Orchids of Bhutan*: 456 (2002).

Phyllorchis penicillium (S.Parish & Reichenbach f.) Kuntze in *Revisio Generum Plantarum* 2: 677 (1891).

Bulbophyllum inopinatum W.W.Smith in *Notes from the Royal Botanic Garden Edinburgh* 8: 346 (1915).

Pseudobulbs 1.5-2.5 × 1-1.5 cm, broadly ovoid, inserted at an interval of 1.5-2.5 cm along the rhizome; leaf solitary, 15-23 × 1.5-2.5 cm, oblong-lanceolate, acute, petiole channeled, 2-3 cm long; inflorescence 18-25 cm

long, racemose, laxly many flowered; flowers 1.5-2 cm across, yellowish brown with dark brown lines; sepals sub equal, narrowly lanceolate, acuminate, yellowish-brown, dorsal sepal 10-12 × 1.5-2.0 mm, 5-veined, lateral sepals 12-14 × 2.5 mm, base broad and adnate to column foot; petals 1-1.3 × 0.7-0.9 mm, ovate, acute, apical margins fimbriate-bearded, brown; lip 12-13 × 3-3.5 mm, simple, lanceolate-oblong, yellowish brown, margins dark brown long fimbriate; column 1-1.5 mm long, yellow, stout, two long acuminate stelidia, foot c. 2 mm long, brown, curved. (Plate 4)

Flowering: May-June.

Specimen examined: India, Manipur, District Senapati; Hengbung, *Chowlu* 00361 (COGCEHR herbarium, Hengbung).

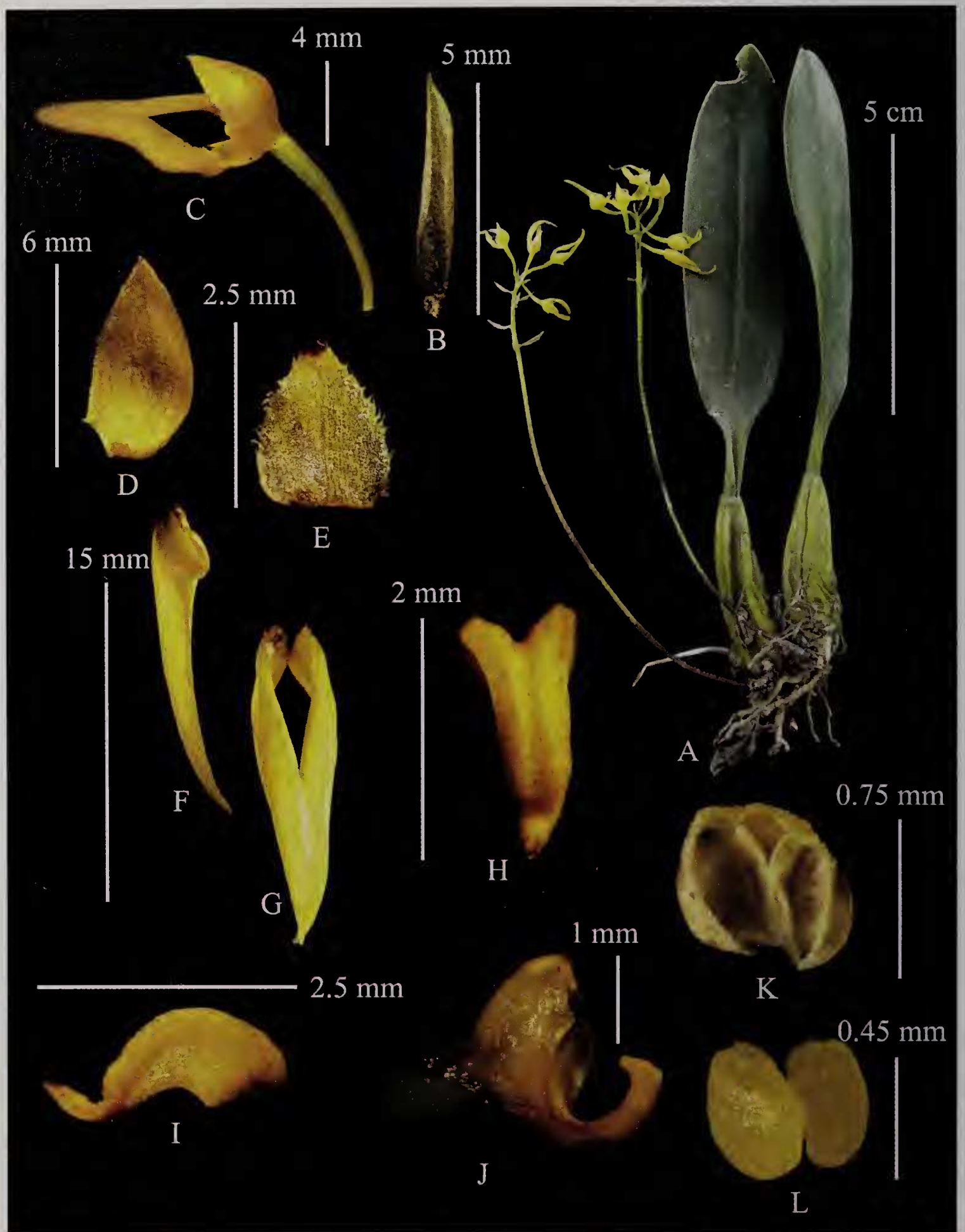
Distribution: India (Arunachal Pradesh, Meghalaya, Nagaland, Sikkim), Myanmar & Thailand.

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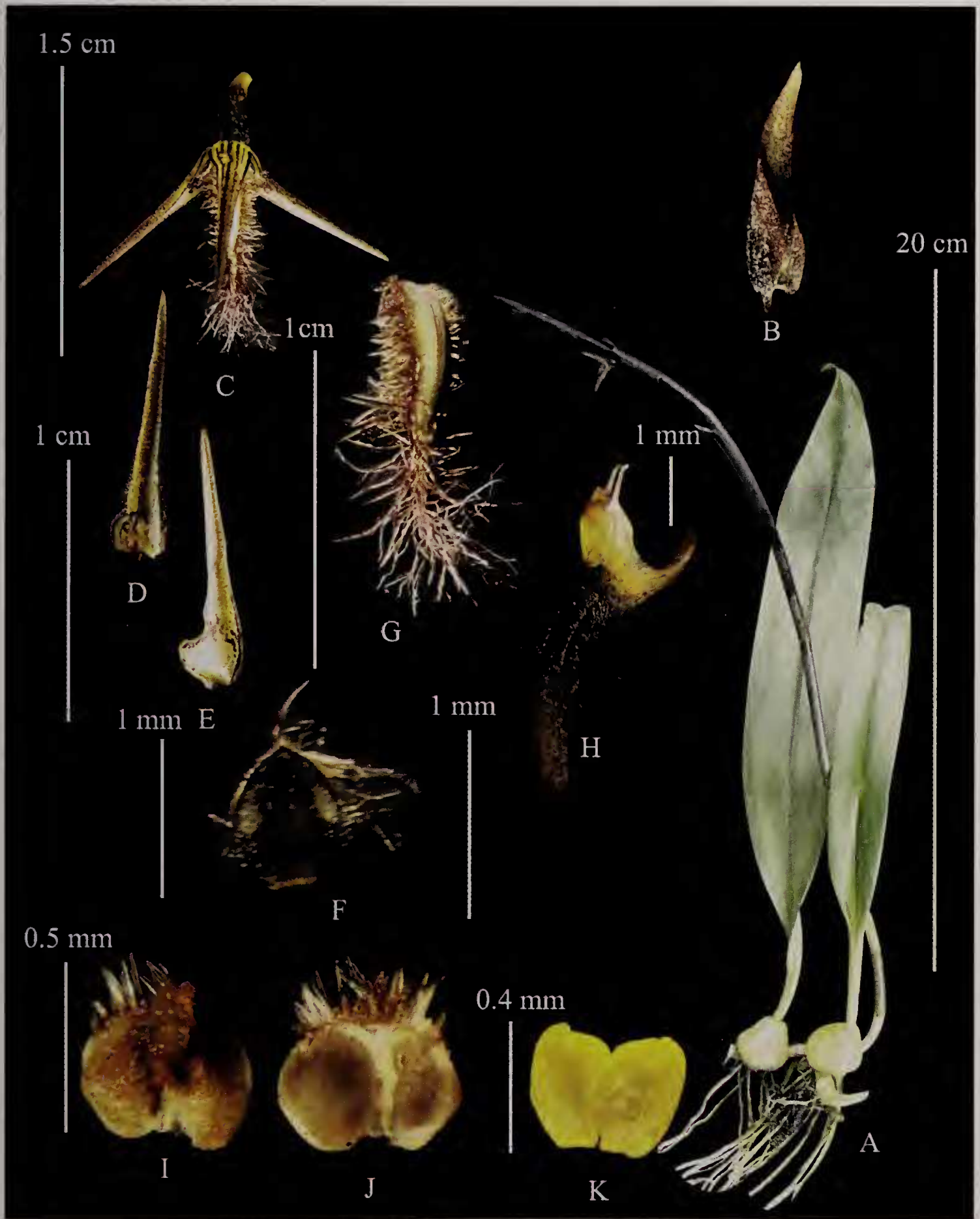
References

- Chauhan, A.S., 2001. A conspectus of orchids of Manipur: Their status and conservation. In P.Pathak, R.N.Sehgal, N.Shekar, M.Sharma & A.Sood (eds.) *Orchids: Science and Commerce*. Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 81-99.
- Chowlu, K., A.Nageswara Rao, N.Angela & S.P.Vij, 2013. A brief account of the genus *Bulbophyllum* (Orchidaceae) of Manipur, India. *Rheedea* 23(2): 86-97.
- Chowlu, K., K.S.Mahar, H.B.Sharma, R.Ngapui, A.Nageswara Rao & S.P.Vij, 2014. *Bulbophyllum dickasonii* Seidenf. (Orchidaceae): a new record for India with complete morphological description. *Kew Bulletin* 69(2): 9495. DOI 10.1007/S12225-014-9495-Z.
- Deb, D.B., 1996. Monocotyledonous plants of Manipur Territory. *Bulletin Botanical Survey India* 3: 126-129.
- Ghatak, J. & R.K.J.Devi, 1986. Orchids of Manipur. In Vij, S.P. (Eds.) *Biology, Conservation and Culture of Orchids*. East West Press Private Limited, New Delhi. pp. 357-362.
- Hooker, J.D., 1890. Orchidaceae. In *Flora of British India* 5: 667-858 & 6: 1-198. Asford, Kent.



Pl. 3: *Bulbophyllum helenae*

A. Habit; B. Bract; C. Flower; D. Dorsal sepal; E. Petal; F. Lateral sepal; G. Lateral sepals (jointed); H. Lip; I. Lip (side view); J. Column; K. Anther cap; L. Pollinia



Pl. 4: *Bulbophyllum penicillium*

A. Habit; B. Bract; C. Flower; D. Dorsal sepal; E. Lateral sepal; F. Petal; G. Lip; H. Column; I. Anther cap (front view); J. Anther cap (back view); K. Pollinia

- Hynniewata, T.M., S.K.Kataki & B.M.Wadhwa, 2000. In Hajra, P.K. & U.Chatterjee (Eds.), *Orchids of Nagaland*. Botanical Survey of India, Calcutta. pp. 51-80.
- Kataki, S.K., 1986. *Orchids of Meghalaya*. Govt. of Meghalaya, Shillong. pp 65-80.
- Kumar, C.S. & S.P.C.Kumar, 2005. Orchid digest of Manipur, Northeastern India. *Rheedea* 15(1): 1-74.
- Lucksom, S.Z., 2007. *The Orchids of Sikkim and North East Himalaya*, Spectrum House, Siliguri. pp 688-772.
- Misra, S., 2007. *Orchids of India-A Glimps*, Bishen Singh Mahendra Pal Singh, Dehra Dun.
- Mukerjee, S.K., 1953. An enumeration of the orchids of Ukhrul, Manipur. *Notes Royal Botanic Garden Edinburgh* 21: 149-154.
- Pearce, N. & P.Cribb, 2002. The Orchids of Bhutan. In *Flora of Bhutan* Vol 3, Part 3: 1-643. Royal Botanical Garden Edinburgh and Royal Government of Bhutan.
- Pradhan, U.C., 1979. *Indian Orchids: Guide to Identification and Culture*, Vol. 2. Self Published, Kalimpong. 2: 371-429.
- Rao, A.N., 2007. Orchid Flora of North East India. An Up Date Analysis. *Bulletin Arunachal Forest Research* 23(1 & 2): 6-38.
- Seidenfanden, G., 1979. Orchid Genera in Thailand VIII: *Bulbophyllum* Thou. *Dansk Botanisk Arkiv* 33(3): 1-228.
- Shukla, U. & A.K.Baishya, 1979. A contribution to the flora of Manipur. *Journal Bombay Natural History Society*. 76: 224-229.

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